



1 Xaa₁ Xaa₂ Xaa₃ Gly Thr Xaa₄ Xaa₅ Xaa₆ Xaa₇ Xaa₈ Ser Lys Gln Xaa₉ Glu Glu Glu Ala Val Arg Leu
5 10 15 20
Xaa₁₀ Xaa₁₁ Xaa₁₂ Xaa₁₃ Leu Lys Asn Gly Gly Xaa₁₄ Ser Ser Gly Ala Xaa₁₅ Xaa₁₆ Xaa₁₇ Xaa₁₈-Z
25 30 35

Compound [SEQ.ID.NO]	Xaa ₁	Xaa ₂	Xaa ₃	Xaa ₄	Xaa ₅	Xaa ₆	Xaa ₇	Xaa ₈	Xaa ₉	Xaa ₁₀	Xaa ₁₁	Xaa ₁₂	Xaa ₁₃	Xaa ₁₄	Xaa ₁₅	Xaa ₁₆	Xaa ₁₇	Xaa ₁₈	Z
1 [10]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Ile	Glu	Phe	Pro	Pro	Pro	Pro	Ser	NH ₂
2 [11]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
3 [12]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Phe	Pro	Pro	Pro	Pro	Ser	NH ₂
4 [13]	Tyr	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
5 [14]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Tyr	NH ₂
6 [15]	His	Gly	Asp	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
7 [16]	His	Gly	Glu	naph	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
8 [17]	His	Gly	Glu	Phe	Ser	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
9 [18]	His	Gly	Glu	Phe	Ser	Thr	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
10 [19]	His	Gly	Glu	Phe	Thr	Thr	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
11 [20]	His	Gly	Glu	Phe	Thr	Ser	Glu	Leu	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
12 [21]	His	Gly	Glu	Phe	Thr	Ser	Asp	pGly	Met	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
13 [22]	His	Gly	Glu	Phe	Thr	Ser	Asp	pGly	Leu	Phe	Ile	Glu	Phe	Pro	Pro	Pro	Pro	Ser	NH ₂
14 [23]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	pGly	Phe	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
15 [24]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	pGly	Phe	Ile	Glu	Phe	Pro	Pro	Pro	Pro	Ser	NH ₂
16 [25]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	naph	Ile	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
17 [26]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Val	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂

Fig. 3A



Compound [SEQ.ID.NO]	Xaa ₁	Xaa ₂	Xaa ₃	Xaa ₄	Xaa ₅	Xaa ₆	Xaa ₇	Xaa ₈	Xaa ₉	Xaa ₁₀	Xaa ₁₁	Xaa ₁₂	Xaa ₁₃	Xaa ₁₄	Xaa ₁₅	Xaa ₁₆	Xaa ₁₇	Xaa ₁₈	Z
18 [27]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Val	Glu	Phe	Pro	Pro	Pro	Pro	Ser	NH ₂
19 [28]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Bug	Glu	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
20 [29]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Bug	Glu	Phe	Pro	Pro	Pro	Pro	Ser	NH ₂
21 [30]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Asp	Trp	Pro	Pro	Pro	Pro	Ser	NH ₂
22 [31]	His	Ala	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Ile	Glu	Phe	Pro	Pro	Pro	Pro	Ser	NH ₂
23 [32]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	tPro	tPro	tPro	tPro	Ser	NH ₂
24 [33]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	tPro	tPro	tPro	Ser	NH ₂
25 [34]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	hPro	hPro	hPro	hPro	Ser	NH ₂
26 [35]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	hPro	hPro	hPro	Ser	NH ₂
27 [36]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Ile	Glu	Phe	tPro	tPro	tPro	tPro	Ser	NH ₂
28 [37]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Ile	Glu	Phe	hPro	hPro	hPro	hPro	Ser	NH ₂
29 [38]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	MeAla	MeAla	MeAla	MeAla	Ser	NH ₂
30 [39]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Met	Phe	Ile	Glu	Trp	Pro	MeAla	MeAla	MeAla	Ser	NH ₂
31 [40]	His	Gly	Glu	Phe	Thr	Ser	Asp	Leu	Leu	Phe	Ile	Glu	Phe	MeAla	MeAla	MeAla	MeAla	Ser	NH ₂

Fig. 3B



Serial No. 09/889,330

Young et al.

"Methods for Glucagon Suppression"

Atty Dkt.: 030639.0031.UTL

Sheet 4 of 26

Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 1	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 2	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 3	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 4	His	Ala	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 5	His	Gly	Glu	Gly	Ala	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 6	His	Gly	Glu	Gly	Thr	Ala	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 7	His	Gly	Glu	Gly	Thr	Phe	Thr	Ala	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 8	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 9	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ala	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 10	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Ala	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 11	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Ala	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 12	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Ala	Glu	Glu	Glu	Ala	Val	Arg
Compound 13	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Ala	Glu	Glu	Glu	Ala	Val	Arg
Compound 14	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 15	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 16	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 17	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 18	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Ala
Compound 19	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 20	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4A1



Serial No. 09/889,33

Young et al.

"Methods for Glucagon Suppression"

Atty Dkt.: 030639.0031.UTL

Sheet 5 of 26

Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 1	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	NH ₂								
Compound 2	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 3	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 4	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 5	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 6	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 7	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 8	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 9	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 10	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 11	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 12	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 13	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 14	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 15	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 16	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 17	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 18	Ala	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 19	Leu	Phe	Ile	Ala	Phe	Leu	Lys	Asn	NH ₂										
Compound 20	Leu	Phe	Ile	Glu	Ala	Leu	Lys	Asn	NH ₂										

Fig. 4A2



Serial No. 09/889,331

Young et al.

"Methods for Glucagon Suppression"

Atty Dkt.: 030639.0031.UTL

Sheet 6 of 26

Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 21	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 22	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 23	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 24	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 25	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 26	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 27	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 28	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 29	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 30	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 31	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 32	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 33	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 34	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 35	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 36	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 37	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 38	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 39	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 40	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 41	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4A3



Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 21	Leu	Phe	Ile	Glu	Phe	Ala	Lys	Asn	NH2										
Compound 22	Leu	Phe	Ile	Glu	Phe	Leu	Ala	Asn	NH2										
Compound 23	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Ala	NH2										
Compound 24	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 25	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 26	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 27	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 28	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 29	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 30	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 31	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	NH2			
Compound 32	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	NH2			
Compound 33	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	NH2				
Compound 34	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	NH2				
Compound 35	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	NH2					
Compound 36	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	NH2					
Compound 37	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser						
Compound 38	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser						
Compound 39	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	NH2							
Compound 40	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	NH2							
Compound 41	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	NH2									

Fig. 4A4



Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 42	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 43	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 44	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 45	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 46	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 47	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 48	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 49	Arg	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 50	His	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 51	His	Gly	Glu	Gly	Thr	naph	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 52	His	Gly	Glu	Gly	Thr	Phe	Ser	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 53	His	Gly	Glu	Gly	Thr	Phe	Ser	Thr	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 54	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Glu	Leu	Ser	Lys	Gln	Met	Ala	Glu	Glu	Ala	Val	Arg
Compound 55	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	pGly	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 56	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 57	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 58	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 59	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 60	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 61	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4B1



Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 42	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	NH2									
Compound 43	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	tPro	Ser	Ser	Gly	Ala	tPro	tPro	tPro	NH2
Compound 44	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	tPro	tPro	tPro	NH2
Compound 45	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Nme	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 46	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Nme	Ser	Ser	Gly	Ala	Nme	Nme	Nme	NH2
Compound 47	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	hPro	Ser	Ser	Gly	Ala	hPro	hPro	hPro	NH2
Compound 48	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	hPro	Ser	Ser	Gly	Ala	hPro	hPro	hPro	NH2
Compound 49	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	NH2			
Compound 50	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	NH2								
Compound 51	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH2										
Compound 52	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH2										
Compound 53	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH2										
Compound 54	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH2										
Compound 55	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH2										
Compound 56	Leu	naph	Ile	Glu	Phe	Leu	Lys	Asn	NH2										
Compound 57	Leu	Phe	tBug	Glu	Trp	Leu	Lys	Asn	NH2										
Compound 58	Leu	Phe	Ile	Asp	Phe	Leu	Lys	Asn	NH2										
Compound 59	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	NH2					
Compound 60	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	NH2									
Compound 61	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	hPro	Ser	Ser	Gly	Ala	hPro	hPro	hPro	NH2

Fig. 4B2



Compound

No.

62 4-Imidazolylpropionyl-Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu

Phe Ile Glu Trp Leu Lys-NH^Eoctanoyl Asn-NH₂

63 4-Imidazolylpropionyl-Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu

Phe Ile Glu Phe Leu Lys-NH^Eoctanoyl Asn-NH₂

64 4-Imidazolylpropionyl-Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu

Phe Ile Glu Trp Leu Lys-NH^Eoctanoyl Asn Gly Gly-NH₂

65 4-Imidazolylpropionyl-Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Ala Val

Arg Leu Phe Ile Glu Phe Leu Lys-NH^Eoctanoyl Asn Gly Gly-NH₂

66 4-Imidazolylpropionyl-Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu

Phe Ile Glu Trp Leu Asn Lys-NH^Eoctanoyl-NH₂

10/26

Fig. 4C



Compound
No.

- 67 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu
Phe Ile Glu Phe Leu Asn Lys-NH^E octanoyl-NH₂
- 68 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Glu Ala Val Arg Leu
Phe Ile Glu Trp Leu Asn Lys-NH^E octanoyl Gly Gly-NH₂
- 69 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Glu Ala Val Arg Leu
Phe Ile Glu Phe Leu Asn Lys-NH^E octanoyl Gly Gly-NH₂

11/26

Fig. 4D



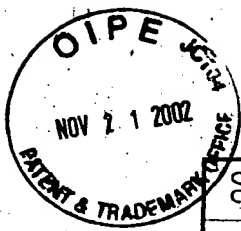
Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 70	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 71	His	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 72	His	Gly	Glu	Ala	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 73	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 74	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 75	His	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 76	His	Gly	Glu	Ala	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 77	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 78	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 79	Ala	Ala	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 80	Ala	Ala	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 81	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 82	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 83	Ala	Gly	Asp	Gly	Ala	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 84	Ala	Gly	Asp	Gly	Ala	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 85	Ala	Gly	Asp	Gly	Thr	Nala	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 86	Ala	Gly	Asp	Gly	Thr	Nala	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 87	Ala	Gly	Asp	Gly	Thr	Phe	Ser	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 88	Ala	Gly	Asp	Gly	Thr	Phe	Ser	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 89	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ala	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4E1



Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 70	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 71	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 72	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 73	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 74	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 75	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 76	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 77	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 78	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 79	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 80	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 81	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 82	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 83	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 84	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 85	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 86	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 87	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 88	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 89	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										

Fig. 4E2



Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 21	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ala	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 22	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 23	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 24	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Glu	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 25	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Glu	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 26	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 27	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 28	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 29	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Pgly	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 30	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ala	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 31	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ala	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 32	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ala	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 33	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Ala	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 34	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Ala	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 35	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Ala	Met	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4E3



Serial No. 09/889,331

Young et al.

"Methods for Glucagon Suppression"

Atty Dkt.: 030639.0031.UTL

Sheet 15 of 26

Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 21	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 22	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 23	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 24	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 25	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 26	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 27	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 28	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 29	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 30	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 31	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 32	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 33	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 34	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 35	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										

Fig. 4E4



Serial No. 09/889,331

Young et al.

"Methods for Glucagon Suppression"

Atty Dkt.: 030639.0031.UTL

Sheet 16 of 26

Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 105	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Ala	Glu	Glu	Glu	Ala	Val	Arg
Compound 106	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Ala	Glu	Glu	Glu	Ala	Val	Arg
Compound 107	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	pGly	Glu	Glu	Glu	Ala	Val	Arg
Compound 108	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	pGly	Glu	Glu	Glu	Ala	Val	Arg
Compound 109	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Ala	Glu	Glu	Ala	Val	Arg
Compound 110	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Ala	Glu	Glu	Ala	Val	Arg
Compound 111	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Ala	Glu	Glu	Ala	Val	Arg
Compound 112	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Ala	Glu	Ala	Val	Arg
Compound 113	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Ala	Glu	Ala	Val	Arg
Compound 114	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Ala	Ala	Val	Arg
Compound 115	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Ala	Ala	Val	Arg
Compound 116	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Ala	Arg
Compound 117	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Ala	Arg
Compound 118	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Ala
Compound 119	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Ala
Compound 120	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 121	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 122	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 123	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 124	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4F1



Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 105	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 106	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 107	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 108	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 109	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 110	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 111	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 112	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 113	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 114	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 115	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 116	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 117	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 118	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 119	Ala	Phe	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 120	Ala	Phe	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 121	Leu	Nala	Ile	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 122	Leu	Nala	Ile	Glu	Phe	Leu	Lys	Asn	NH ₂										
Compound 123	Leu	Phe	Val	Glu	Trp	Leu	Lys	Asn	NH ₂										
Compound 124	Leu	Phe	Val	Glu	Phe	Leu	Lys	Asn	NH ₂										

Fig. 4F2



Serial No. 09/889,331

Young et al.

"Methods for Glucagon Suppression"

Atty Dkt.: 030639.0031.UTL

Sheet 18 of 26

Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 125	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 126	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 127	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 128	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 129	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 130	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 131	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 132	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 133	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 134	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 135	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 136	Ala	Gly	Asp	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 137	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 138	His	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 139	His	Gly	Glu	Ala	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 140	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4F3



Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 125	Leu	Phe	tGly	Glu	Trp	Leu	Lys	Asn	NH2										
Compound 126	Leu	Phe	tGly	Glu	Phe	Leu	Lys	Asn	NH2										
Compound 127	Leu	Phe	Ile	Asp	Trp	Leu	Lys	Asn	NH2										
Compound 128	Leu	Phe	Ile	Asp	Phe	Leu	Lys	Asn	NH2										
Compound 129	Leu	Phe	Ile	Glu	Ala	Leu	Lys	Asn	NH2										
Compound 130	Leu	Phe	Ile	Glu	Ala	Leu	Lys	Asn	NH2										
Compound 131	Leu	Phe	Ile	Glu	Trp	Ala	Lys	Asn	NH2										
Compound 132	Leu	Phe	Ile	Glu	Phe	Ala	Lys	Asn	NH2										
Compound 133	Leu	Phe	Ile	Glu	Trp	Leu	Ala	Asn	NH2										
Compound 134	Leu	Phe	Ile	Glu	Phe	Leu	Ala	Asn	NH2										
Compound 135	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Ala	NH2										
Compound 136	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Ala	NH2										
Compound 137	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 138	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 139	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2
Compound 140	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	NH2	

Fig. 4F4



Amino Acid Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Compound 141	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Ala	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 142	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 143	His	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 144	His	Gly	Glu	Ala	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 145	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 146	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 147	His	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 148	His	Gly	Glu	Ala	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 149	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 150	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg
Compound 151	His	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 152	His	Gly	Glu	Ala	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 153	His	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Ala	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 154	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 155	His	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 156	His	Gly	Asp	Ala	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 157	Ala	Gly	Glu	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Met	Glu	Glu	Glu	Ala	Val	Arg
Compound 158	Ala	Gly	Ala	Gly	Thr	Phe	Thr	Ser	Asp	Leu	Ser	Lys	Gln	Leu	Glu	Glu	Glu	Ala	Val	Arg

Fig. 4G1



Se No. 09/889,331

Young et al.

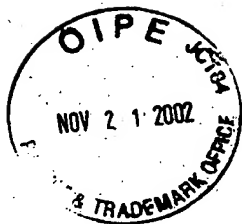
"Methods for Glucagon Suppression"

Atty Dkt: 030639.0031.UTL

Sheet 21 of 26

Amino Acid Position	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Compound 141	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	NH2		
Compound 142	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	NH2			
Compound 143	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	NH2			
Compound 144	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	NH2				
Compound 145	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	NH2					
Compound 146	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	NH2						
Compound 147	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	NH2						
Compound 148	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	NH2							
Compound 149	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	NH2							
Compound 150	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	NH2									
Compound 151	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	NH2									
Compound 152	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	tPro	Ser	Ser	Gly	Ala	tPro	tPro	tPro	NH2
Compound 153	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	tPro	tPro	tPro	NH2
Compound 154	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Nme	Ser	Ser	Gly	Ala	Nme	Nme	NH2	
Compound 155	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	hPro	Ser	Ser	Gly	Ala	hPro	NH2		
Compound 156	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	NH2			
Compound 157	Leu	Phe	Ile	Glu	Trp	Leu	Lys	Asn	Gly	Gly	NH2								
Compound 158	Leu	Phe	Ile	Glu	Phe	Leu	Lys	Asn	Gly	Gly	Pro	Ser	Ser	Gly	Ala	Pro	Pro	Pro	NH2

Fig. 4G2



Compound
No.

159 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Ala Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu
Phe Ile Glu Trp Leu Lys-NH^Eoctanoyl Asn-NH₂

160 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Ala Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu
Phe Ile Glu Phe Leu Lys-NH^Eoctanoyl Asn-NH₂

161 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Ala Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu
Phe Ile Glu Trp Leu Lys-NH^Eoctanoyl Asn Gly Gly-NH₂

162 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Ala Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu
Phe Ile Glu Phe Leu Lys-NH^Eoctanoyl Asn Gly Gly-NH₂

163 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Ala Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu
Phe Ile Glu Trp Leu Asn Lys-NH^Eoctanoyl-NH₂

164 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Ala Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu
Phe Ile Glu Phe Leu Asn Lys-NH^Eoctanoyl-NH₂

Fig. 4H



Compound
No.

165 4-Imidazolylpropionyl-Gly Glu Gly Thr Ser Ala Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu
Phe Ile Glu Trp Leu Asn Lys-NH^Eoctanoyl Gly Gly-NH₂

166 4-Imidazolylpropionyl-Gly Glu Gly Thr Phe Thr Ser Ala Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu
Phe Ile Glu Phe Leu Asn Lys-NH^Eoctanoyl Gly Gly-NH₂

167 Ala Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu Phe Ile Glu Trp
Leu Lys-NH^Eoctanoyl Asn -NH₂

168 Ala Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu Phe Ile Glu Phe
Leu Lys-NH^Eoctanoyl Asn -NH₂

169 Ala Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Ala Val Arg Leu Phe Ile Glu Trp
Leu Lys-NH^Eoctanoyl Asn Gly Gly-NH₂

170 Ala Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Ala Val Arg Leu Phe Ile Glu Phe
Leu Lys-NH^Eoctanoyl Asn Gly Gly-NH₂

Fig. 4I



Compound
No.

171 Ala Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Glu Ala Val Arg Leu Phe Ile Glu Trp
Leu Asn Lys-NH^E octanoyl-NH₂

172 Ala Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Glu Ala Val Arg Leu Phe Ile Glu Phe
Leu Asn Lys-NH^E octanoyl-NH₂

173 Ala Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Glu Ala Val Arg Leu Phe Ile Glu Trp
Leu Asn Lys-NH^E octanoyl Gly Gly-NH₂

174 Ala Gly Glu Gly Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu Glu Ala Val Arg Leu Phe Ile Glu Phe
Leu Asn Lys-NH^E octanoyl Gly Gly-NH₂

Fig. 4J



Effect of functional nephrectomy on Exendin-4 clearance

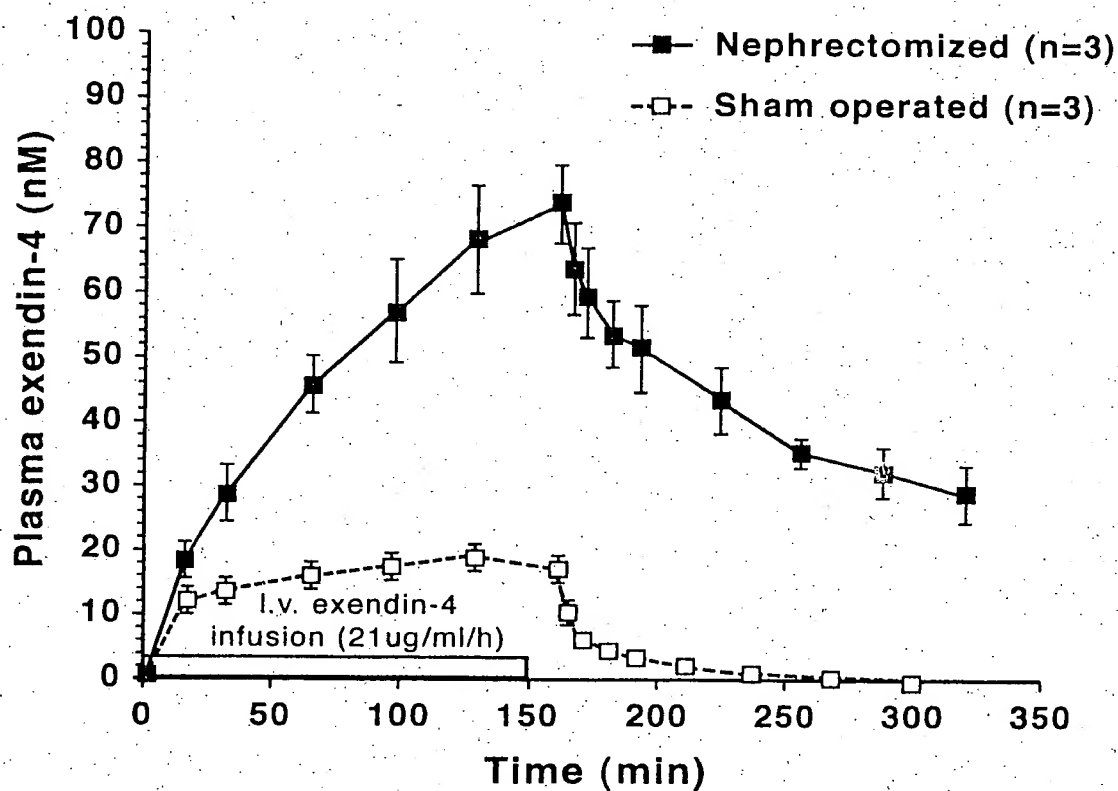


Fig. 5

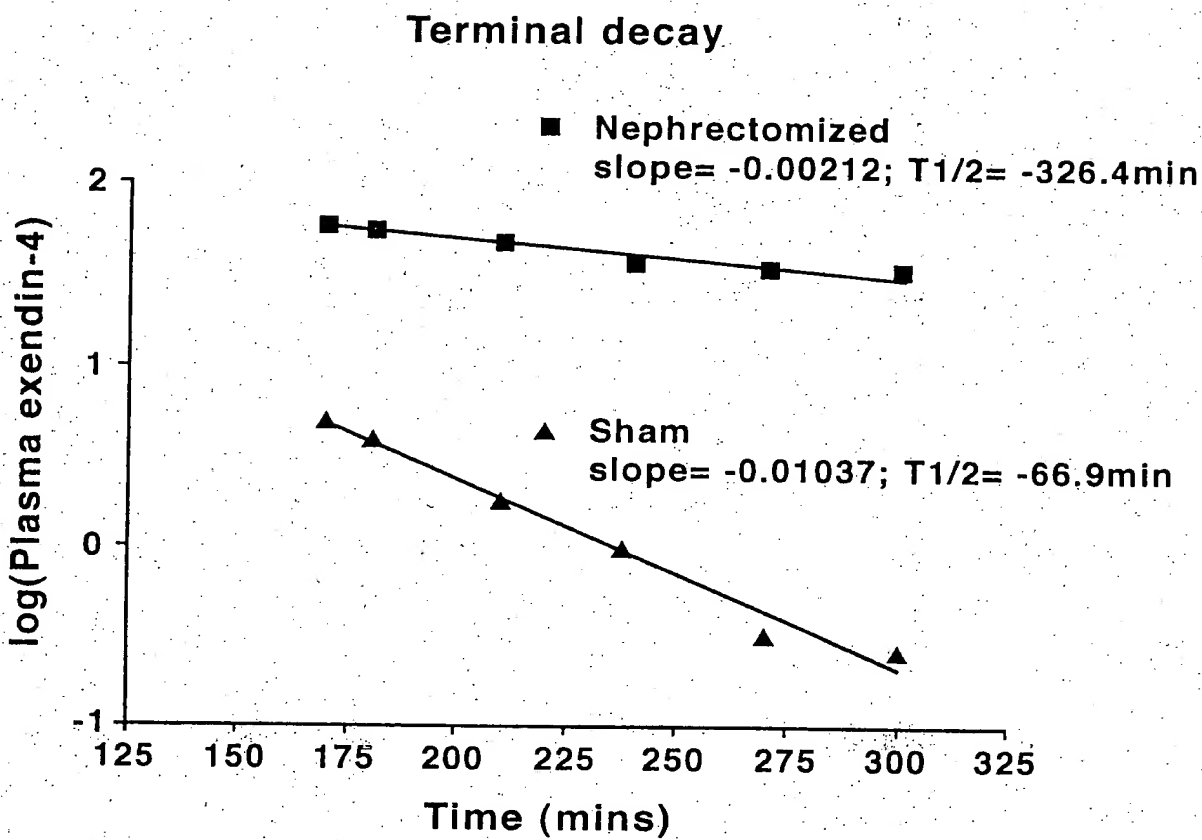


Fig. 6